

Math Worksheet

Multiple Choice

1. Simplify: $12 - [4 - (6 - 9)] \div 5$

☐ 11

☐ $\frac{59}{5}$

☐ $\frac{53}{5}$

☐ $\frac{57}{5}$

2. Simplify: $\frac{18}{3} - (5 - \frac{14}{7}) \times 2$

☐ 0

☐ 10

☐ -1

☐ 6

3. Evaluate: $8 - [2 - (\frac{9}{3} - 5)]$

☐ 4

☐ 8

☐ -4

☐ 0

4. Simplify: $20 \div (4 + 1) \times (6 - 2)$

☐ 20

☐ 1

☐ 16

☐ 4

5. Simplify: $7 - (\frac{15}{3} + 2^3)$

☐ 10

☐ -4

☐ -6

☐ 6

6. Simplify: $\frac{48}{12} - (6 - \frac{9}{3})^2$

☐ 5

☐ -2

☐ -23

☐ -5

7. Evaluate: $(\frac{2}{5} - \frac{1}{10}) \times 20$

☐ 4

☐ 10

☐ 2

☐ 6

8. **Simplify:** $\frac{3}{4} \div \left(\frac{5}{8} - \frac{1}{2}\right)$

☐ $\frac{3}{32}$

☐ 2

☐ 6

☐ $\frac{1}{6}$

9. **Solve:** $5x - 7 = 2x + 8$

☐ $x = \frac{15}{7}$

☐ $x = 5$

☐ $x = 1$

☐ $x = 3$

10. **Solve:** $\frac{2x}{3} + 4 = 10$

☐ $x = 21$

☐ $x = 3$

☐ $x = 9$

☐ $x = 6$

11. **Solve:** $7(x - 2) = 3(x + 4) + 2$

☐ $x = 7$

☐ $x = 6$

☐ $x = 8$

☐ $x = 2$

12. **Solve:** $\frac{x-5}{4} = \frac{2x+1}{6}$

☐ $x = 13$

☐ $x = -13$

☐ $x = -17$

☐ $x = -3$

13. **Solve:** $3x - \frac{5}{2} = \frac{x}{4} + \frac{7}{2}$

☐ $x = 2$

☐ $x = \frac{6}{11}$

☐ $x = \frac{4}{11}$

☐ $x = \frac{24}{11}$

14. **Solve:** $2(3x - 4) = 5(2x - 7) + 6$

☐ $x = \frac{27}{4}$

☐ $x = \frac{21}{4}$

☐ $x = \frac{33}{4}$

☐ $x = -\frac{3}{4}$

15. **Solve:** $\frac{5x}{2} - 7 = \frac{3x}{4} + 2$

☐ $x = -\frac{20}{7}$

☐ $x = \frac{20}{7}$

☐ $x = \frac{36}{7}$

☐ $x = \frac{9}{7}$

16. Solve: $\frac{2(x+3)}{5} - \frac{x-1}{3} = 1$

☐ $x = -8$

☐ $x = -22$

☐ $x = 8$

☐ $x = 2$

17. What is the solution to the inequality $3x - 7 < 2x + 5$?

☐ $x < 2$

☐ $x < 12$

☐ $x > 2$

☐ $x > 12$

18. What is the solution to the inequality $\frac{2x-5}{3} \geq \frac{x+7}{2}$?

☐ $x \leq 31$

☐ $x \geq 11$

☐ $x \leq 11$

☐ $x \geq 31$

19. What is the solution to the inequality $5 - 2x \leq 3(x + 1)$?

☐ $x \leq \frac{2}{5}$

☐ $x \geq 2$

☐ $x \leq 2$

☐ $x \geq \frac{2}{5}$

20. What is the solution to the inequality $\frac{x+4}{2} - \frac{x-2}{3} < 5$?

☐ $x < 10$

☐ $x > 14$

☐ $x > 10$

☐ $x < 14$

21. What is the solution to the inequality $2(x - 3) + 5 \geq x + 12$?

☐ $x \geq 17$

☐ $x \leq 17$

☐ $x \geq 13$

☐ $x \leq 13$

22. What is the solution to the inequality $\frac{7-2x}{4} > \frac{x}{2} - 1$?

☐ $x < \frac{11}{4}$

☐ $x > \frac{11}{4}$

☐ $x < \frac{3}{4}$

☐ $x > \frac{3}{4}$

23. Simplify: $\left(\frac{3x^{-1}y^2}{2x^2y^{-3}}\right)^4$

☐ $\frac{12y^{20}}{8x^{12}}$

☐ $\frac{81y^{20}}{16x^4}$

☐ $\frac{81y^{10}}{16x^{12}}$

☐ $\frac{81y^{20}}{16x^{12}}$

24. Simplify: $\frac{2^{-3} \cdot 4^2}{8^{-1}}$

☐ 1/16

☐ 1/4

☐ 2

☐ 16

25. Simplify: $\frac{(x^{-2}y)^3}{(x^3y^{-2})^2}$

☐ $\frac{y}{x^{12}}$

☐ $\frac{y^7}{x^{12}}$

☐ $\frac{y^7}{x^6}$

☐ $\frac{y^7}{x^0}$

26. Simplify: $\left(\frac{p^{-1}q^2}{r^{-3}}\right)^{-2}$

☐ $\frac{q^4r^6}{p^2}$

☐ $\frac{p^2}{q^4r^6}$

☐ $\frac{p^2q^4}{r^6}$

☐ $\frac{p^2r^6}{q^4}$

27. Simplify: $\frac{(a^2b^{-3})^{-2}(a^{-1}b)^3}{a^{-4}b^{-2}}$

☐ $\frac{b^5}{a^3}$

☐ $\frac{b^{11}}{a^{11}}$

☐ $\frac{b^{11}}{a^3}$

☐ $\frac{a^3}{b^{11}}$

28. Simplify: $\frac{(x^{-2}y^3z^{-1})^2 \cdot (x^3y^{-1}z)^4}{x^{-5}y^2z^{-3}}$

☐ x^3z^5

☐ $x^{13}z^5$

☐ $\frac{x^{13}z^5}{y^4}$

☐ $x^{13}y^4z^5$

29. Simplify: $\frac{(a^{-3}b^2c)^3 \cdot (a^2b^{-1})^{-2}}{a^{-4}b^3c^{-2}}$

☐ $\frac{a^9c^5}{b^5}$

☐ $\frac{b^5c^5}{a^9}$

☐ $\frac{b^5c}{a^9}$

☐ $\frac{b^5c^5}{a^{17}}$

30. Simplify: $\frac{(p^2q^{-3}r)^4}{(p^{-1}q^3r^{-2})^{-3}}$

☐ $\frac{p^{11}}{q^{18}r^{10}}$

☐ $\frac{p^5q^6}{r^2}$

☐ $\frac{p^5}{q^6r^2}$

☐ $\frac{q^6r^2}{p^5}$

31. Simplify: $\frac{(x^{-1}y^2z^{-3})^{-2} \cdot (x^4yz^{-1})^3}{(x^2y^{-1}z^2)^{-1}}$

☐ $\frac{x^{16}y^2}{z^5}$

☐ $\frac{x^{16}z}{y^2}$

☐ $\frac{x^{12}z^5}{y^2}$

☐ $\frac{x^{16}z^5}{y^2}$

32. Simplify: $\sqrt{50}$

☐ $2\sqrt{5}$

☐ $5\sqrt{2}$

☐ 25

☐ $5\sqrt{10}$

33. Simplify: $\sqrt{72} - \sqrt{32}$

☐ $4\sqrt{2}$

☐ $2\sqrt{2}$

☐ $\sqrt{40}$

☐ $10\sqrt{2}$

34. Simplify: $\sqrt{18} \cdot \sqrt{12}$

☐ $6\sqrt{2}$

☐ $\sqrt{216}$

☐ $5\sqrt{6}$

☐ $6\sqrt{6}$

35. Simplify: $\frac{\sqrt{45}}{\sqrt{5}}$

☐ $\sqrt{9}$

☐ 3

☐ $\sqrt{50}$

☐ 5

36. Rationalise: $\frac{5}{\sqrt{3}}$

☐ $\frac{5\sqrt{3}}{3}$

☐ $\frac{5}{3}$

☐ $5\sqrt{3}$

☐ $\frac{\sqrt{3}}{5}$

37. Rationalise: $\frac{7}{2-\sqrt{3}}$

☐ $14 - 7\sqrt{3}$

☐ $2 + \sqrt{3}$

☐ $14 + 7\sqrt{3}$

☐ $7(2 - \sqrt{3})$

38. Simplify: $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$

☐ $\frac{7+2\sqrt{10}}{3}$

☐ $\frac{7-2\sqrt{10}}{3}$

☐ $7 + 2\sqrt{10}$

☐ $\frac{3}{7+2\sqrt{10}}$

39. Simplify: $\frac{1}{\sqrt{7}+\sqrt{3}}$

☐ $\frac{\sqrt{7}-\sqrt{3}}{4}$

☐ $\sqrt{7} - \sqrt{3}$

☐ $\frac{\sqrt{7}+\sqrt{3}}{4}$

☐ $\frac{4}{\sqrt{7}-\sqrt{3}}$

40. Solve the quadratic equation $2x^2 - 5x - 12 = 0$.

☐ $x = 4, x = \frac{3}{2}$

☐ $x = 3, x = -\frac{2}{3}$

☐ $x = 4, x = -\frac{3}{2}$

☐ $x = -4, x = \frac{3}{2}$

41. Solve the quadratic equation $3x^2 + 2x - 8 = 0$.

☐ $x = \frac{3}{4}, x = -2$

☐ $x = \frac{4}{3}, x = -2$

☐ $x = -\frac{3}{4}, x = 2$

☐ $x = -\frac{4}{3}, x = 2$

42. Solve the quadratic equation $4x^2 - 12x + 9 = 0$.

☐ $x = \frac{2}{3}$

☐ $x = -\frac{3}{2}$

☐ $x = \frac{3}{2}$

☐ $x = -\frac{2}{3}$

43. Solve the equation $\frac{1}{2}x^2 - \frac{3}{2}x + 1 = 0$.

☐ $x = 1, x = -2$

☐ $x = -1, x = -2$

☐ $x = -1, x = 2$

☐ $x = 1, x = 2$

44. Solve the equation $5x^2 - 45 = 0$.

☐ $x = \pm 3$

☐ $x = \pm\sqrt{3}$

☐ $x = \pm 9$

☐ $x = 3$

45. Solve the quadratic equation $6x^2 + 5x - 6 = 0$.

☐ $x = \frac{2}{3}, x = -\frac{3}{2}$

☐ $x = \frac{3}{2}, x = -\frac{2}{3}$

☐ $x = -\frac{2}{3}, x = \frac{3}{2}$

☐ $x = \frac{1}{2}, x = -3$

46. Solve the equation $(x + 5)(x - 2) = -10$.

☐ $x = -2, x = 5$

☐ $x = 0, x = 3$

☐ $x = 2, x = -5$

☐ $x = 0, x = -3$

47. Solve the equation $(3x - 2)^2 - (x + 1)^2 = 0$.

☐ $x = -\frac{3}{2}, x = -\frac{1}{4}$

☐ $x = \frac{3}{2}, x = \frac{1}{4}$

☐ $x = \frac{2}{3}, x = -1$

☐ $x = 0, x = 1$

48. Classify the roots of $2x^2 - 7x + 3 = 0$.

☐ No real roots (complex conjugates).

☐ Exactly one real root (repeated).

☐ Two distinct real irrational roots.

☐ Two distinct real rational roots.

49. Classify the roots of $\frac{1}{2}x^2 - 5x + 6 = 0$.

☐ No real roots (complex conjugates).

☐ Exactly one real root (repeated).

☐ Two distinct real rational roots.

☐ Two distinct real irrational roots.

50. Classify the roots of $x^2 - 4x + 8 = 0$.

☐ Exactly one real root (repeated).

☐ No real roots (complex conjugates).

☐ Two distinct real irrational roots.

☐ Two distinct real rational roots.

51. Find all real k for which $x^2 - (k + 3)x + k = 0$ has equal roots.

☐ $k = -3$

☐ $k = -1$

☐ $k = 3$

☐ No real k satisfies this condition.

52. For which m does $2x^2 + (m - 1)x + (m + 4) = 0$ have real roots?

☐ $m \leq 5 + 2\sqrt{14}$

☐ $m = 5 - 2\sqrt{14}$ or $m = 5 + 2\sqrt{14}$

☐ $m \leq 5 - 2\sqrt{14}$ or $m \geq 5 + 2\sqrt{14}$.

☐ $5 - 2\sqrt{14} < m < 5 + 2\sqrt{14}$

53. Find k so that $4x^2 + kx + 9 = 0$ has a repeated root.

☐ $k = 12$

☐ $k = \pm 12$.

☐ No real k

☐ $k = -12$

54. For which t does $tx^2 - 6x + 9 = 0$ have exactly one solution as a quadratic?

☐ $t = -1$

☐ $t = 0$

☐ $t = 1$.

☐ $t = 4$

55. Determine all p for which $(p + 1)x^2 - 2(p - 2)x + p = 0$ has no real roots.

☐ $p < \frac{4}{5}$

☐ $p > \frac{4}{5}$

☐ $p = \frac{4}{5}$

☐ $p \leq \frac{4}{5}$

56. Solve $2x^2 - 3x - 5 = 0$.

☐ $x = 5, -1$

☐ $x = -\frac{5}{2}, -1$

☐ $x = \frac{5}{2}, -1$

☐ $x = \frac{3}{2}, 1$

57. Solve $5x^2 + 2x + 7 = 0$.

☐ $x = \frac{-1 \pm \sqrt{34}}{5}$

☐ $x = \frac{1 \pm i\sqrt{34}}{5}$

☐ $x = \frac{-1 \pm i\sqrt{39}}{5}$

☐ $x = \frac{-1 \pm i\sqrt{34}}{5}$

58. Solve $x^2 - 6x + 7 = 0$.

☐ $x = 3 \pm \sqrt{2}$

☐ $x = 6 \pm \sqrt{2}$

☐ $x = 3 \pm \sqrt{8}$

☐ $x = -3 \pm \sqrt{2}$

59. Solve $\frac{1}{2}x^2 - 5x + 6 = 0$.

☐ $x = 5 \pm \sqrt{13}$

☐ $x = -5 \pm \sqrt{13}$

☐ $x = \frac{5 \pm \sqrt{13}}{2}$

☐ $x = 5 \pm \sqrt{7}$

60. Solve $4x^2 + x - 3 = 0$.

☐ $x = \frac{3}{2}, -1$

☐ $x = \frac{3}{4}, -1$

☐ $x = -\frac{3}{4}, 1$

☐ $x = \frac{1}{4}, -3$

61. Solve $7x^2 - 2x - 5 = 0$.

☐ $x = 1, -\frac{2}{7}$

☐ $x = \frac{2}{7}, -5$

☐ $x = 1, -\frac{5}{7}$

☐ $x = -1, \frac{5}{7}$

62. Solve $(x + 1)(x - 3) = 7$.

☐ $x = 1 \pm \sqrt{10}$

☐ $x = 1 \pm \sqrt{11}$

☐ $x = -1 \pm \sqrt{11}$

☐ $x = 2 \pm \sqrt{11}$

63. **Solve** $\frac{3}{4}x^2 - \frac{5}{2}x + 1 = 0$.

☐ $x = \frac{2 \pm \sqrt{13}}{3}$

☐ $x = \frac{5 \pm \sqrt{13}}{3}$

☐ $x = \frac{5 \pm \sqrt{17}}{3}$

☐ $x = \frac{5 \pm \sqrt{13}}{4}$